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Docket Nos. 50-280
and 50-281

Mr. W. L. Stewart
Vice President - Nuclear Operations
Virginia Electric and Power Company
Post Office Box 26666
Richmond, Virginia 23261

Dear Mr. Stewart:

By letter dated December 4, 1981, the NRC issued a Safety Evaluation Report (SER) related to the safe shutdown capability (Appendix R to 10 CFR 50) of the Surry Power Station, Unit Nos. 1 and 2. The SER identified three open items for which additional information was needed. You provided additional information by letters dated February 12 and June 18, 1982.

Enclosed is our Supplemental Safety Evaluation Report (SSER) which addresses the referenced open items related to Appendix R, and includes the approval of the proposed modification regarding the relocation of one charging pump service water pump and its respective water source of each unit from the service building to the turbine building.

In addition to the open items discussed in the SSER, you requested exemptions from the requirements of Appendix R on July 23, 1982, which would remove the requirement to install a fixed fire suppression system in the control room and emergency switchgear rooms. Our review of these exemptions requests will be the subject of separate correspondence.

We conclude that the Surry Power Station is in compliance with the requirements of Sections III.G.3 and III.L to Appendix R of 10 CFR 50 except for a fixed suppression system in the control room and emergency switchgear rooms.

Sincerely,
Original signed by
S. A. Varga

Steven A. Varga, Chief
Operating Reactors Branch No. 1
Division of Licensing

Enclosure:
As stated

cc w/enclosure:
See next page

SEE PREVIOUS FORM 318 FOR PREVIOUS CONCURRENCE*

OFFICE	ORB 1	ORB 1	ORB 4				
SURNAME	DNeighbors/rs	SVarga	TWambach*				
DATE	11/17/82	11/18/82	11/16/82				

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Docket Nos. 50-280
50-281

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Vice President - Nuclear Operations
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Post Office Box 26666
Richmond, Virginia 23261

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We conclude that the Surry Power Station is in compliance with the requirements of Sections III.G.3 and III.L to Appendix R of 10 CFR 50 except for the control room and the emergency switchgear rooms.

Sincerely,

Steven A. Varga, Chief
Operating Reactors Branch #1
Division of Licensing

Enclosure:
As stated

cc w/encl:
See next page

OFFICE	DL:ORB#1	DL:ORB#1	ORB#5:DL				
SURNAME	DNeighbors:ms	SAVarga	TWambach				
DATE	11/9/82	11/ /82	11/16/82				

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SURRY POWER STATION, UNITS 1 AND 2

SUPPLEMENTAL SAFETY EVALUATION REPORT

FOR APPENDIX R TO 10 CFR 50,

ITEMS III.G.3 AND III.L

Introduction

The staff's Safety Evaluation Report (SER) dated December 4, 1981 regarding the safe shutdown capability of the Surry Power Station Units 1 and 2, was based on the submittals from the licensee dated October 29, 1980, October 31, 1980, May 19, 1981 and October 12, 1982, and a conference call on September 22, 1981. The SER identified three open items for which additional information was needed in order to complete our review (Items 1-3 below), and one open item which required further staff evaluation (Item 4 below).

1. Cold leg temperature or Tavg, steam generator pressure, source range neutron flux monitoring and process fluid tank level indication at the auxiliary or remote shutdown panels should be provided.

2. Procedures and manpower requirements needed to perform safe shutdown tasks have not been addressed.

3. The effects of associated circuit interactions with respect to alternate safe shutdown functions have not been addressed.

4. The adequacy of signal isolators has not yet been evaluated (staff action).

The licensee was also requested to submit a final design proposal and analysis of the modification regarding the relocation of two charging pump service water pumps and their respective water sources.

By letters dated February 12, 1982 and June 18, 1982, and a conference call on July 2, 1982, the licensee provided a discussion for each of the open items, and provided their final design proposal of the modification regarding the relocation of two charging pump service water pumps.

Evaluation

Open Item 1 - Cold leg temperature or Tavg, steam generator pressure, source range neutron flux monitoring and process fluid tank level indication at the auxiliary or remote shutdown panels should be provided.

The licensee has stated that cold leg temperature, steam generator pressure and source range neutron flux indication will be provided on the remote panels. However, tank level indication would not be provided at the remote panel since direct tank level readings could be obtained at the tanks themselves.

Based on the above, we find that the licensee's response with respect to cold leg temperature, steam generator pressure and source range neutron flux indication is acceptable. We also conclude that the licensee's response regarding tank level indication at the remote shutdown panel is acceptable since direct readings may be obtained from the tanks.

Open Item 2.- Procedures and manpower needed to perform safe shutdown tasks have not been addressed.

The licensee has stated that two systems which are required for cold shutdown that may require repair in order to reach cold shutdown are the residual heat removal (RHR) system and the pressurizer heaters. The licensee has provided a schedule of the tasks involved, time required, and men involved to accomplish each task and has verified that manpower is available in order to assure the capability to achieve cold shutdown within 72 hours.

We have reviewed the information submitted by the licensee and concluded that the licensee meets the manpower and schedular requirements.

Open Item 3 - The effects of associated circuit interactions with respect to alternate safe shutdown functions have not been addressed.

The licensee has provided an associated circuits study utilizing the Fire Area Approach as described in the Clarification of Generic Letter 81-12. The licensee has stated that alternate shutdown may be required in the event of a fire in the control room, emergency switchgear rooms, cable vault and tunnel areas, cable tray rooms, and portions of the auxiliary building and auxiliary feedwater pumphouses.

An alternate shutdown panel, located in each of the respective units emergency switchgear room, contains the necessary controls for safe shutdown and is electrically isolated from the control room to the extent that a fire in the control room will not affect its function. However, a fire in the emergency switchgear room which affects the alternate shutdown panel could impair the operability of controls and instrumentation in the control room. Thus, an electrically isolated remote panel will be installed in the cable tray room to provide instrumentation needed for process monitoring.

The two systems/components which could be affected by a fire, common to all of the above identified areas are the auxiliary feedwater pumps and the CVCS charging pumps. A fire in any of these areas could render the unit's auxiliary feedwater (AFW) pumps and/or the CVCS charging pumps inoperable from the control room. As such, the licensee has provided a "cross-tie" capability which allows the component(s) of the opposite unit to fulfill the shutdown requirements of the affected unit in the event such a configuration is needed. No other components or instrumentation need to be cross-tied to achieve safe shutdown conditions since other plant functions will be controlled or monitored by the normal equipment or the "new" remote panel. The licensee has verified that all support systems including instrumentation and emergency power sources needed for the alternative shutdown method will be available.

The licensee has provided a cable routing summary of power cabling which shows that power and control feeds for the alternative shutdown equipment do not enter into any fire area of the normal safe shutdown equipment. Circuits which are required for alternate shutdown are equipped with breakers which are coordinated and that fire induced hot shorts, open circuits or shorts to ground will not prevent operation or cause maloperation of the alternative method.

The licensee has provided a summary of valves and cables which were considered for spurious operation. The charging pump discharge, auxiliary feedwater discharge, and safety injection MOV valves, though not required to operate during the shutdown procedure, are required to open and remain open when the alternative shutdown procedure is used. Procedures will be written to ensure correct alternate shutdown system alignment in order to maintain safe plant conditions.

Valves whose spurious operation could cause an accident or adversely affect the shutdown effort are: the RHR interlock valves, the pressurizer relief valves, and atmospheric dump valves. To ensure reactor pressure boundary integrity when the primary system pressure is above the RHR system operating pressure, the breaker to one of the two series RHR valves will be open. To prevent an inadvertent depressurization via the pressurizer relief valves, procedural guidelines will include opening of the power supply breakers for these valves if the pressurizer level and pressure begin to drop. The atmospheric dump valves have similar control circuits as the pressurizer relief valves and will fail closed if the control circuit power is de-energized. Alternative shutdown methods procedures will instruct that the breaker be de-energized in the event the atmospheric dump valves will not close. The licensee will verify all procedures such that safe plant conditions can be maintained at all times.

The licensee's study has revealed no circuits which share a common enclosure with circuits of the alternative shutdown systems. Also, no new electrical isolation is required to be made as a result of the methodology required by the studies listed above.

We conclude that the licensee has adequately addressed the effects of associated circuits interactions, and that the necessary precautions and procedures are adequate to ensure that such circuit interactions will not prevent or adversely affect safe shutdown.

Open Item 4 - The adequacy of signal isolators have not yet been evaluated (staff action).

The staff finds that the signal isolators to be adequate provided that the isolators are rated for the loads involved, and that they meet an approved national standard such as NEMA.

The licensee has provided a final design proposal regarding the relocation of the charging pump service water (CPSW) pumps. Two CPSW pumps will be relocated in a seismically designed cubicle in the turbine building, so that redundant fire protected trains will be provided for service water to charging pumps. The relocated pumps and associated piping will be installed to the same level of capability as before relocation.

The charging pump service water system redesign is in compliance with the applicable portions of the Standard Review Plan based on the following:

1. Section 3.4.1, "Flood Protection."

   The relocated pumps will be protected from flooding in accordance with the original plant design basis.

2. Section 3.5.1.1, "Internally Generated Missiles Outside Containment."

   These relocated pumps will be inside a seismically designed cubicle in the turbine building. The new location of the pumps and the separation provided will meet the requirements of SRP 3.5.1.1.

3. Section 3.5.1.4, "Missiles Generated by Natural Phenomena."

   All components will be inside tornado protected barriers and will be protected from tornado generated missiles.

4. Section 3.5.2, "Structures, Systems and Components to be Protected from Externally Generated Missiles."

   These relocated pumps will be inside a cubical in the turbine building. The pumps will be protected from external missiles.

5. Section 3.6.1, "Plant Design for Protection Against Postulated Piping Failures in Fluid Systems Outside Containment."

   This system will be protected from postulated piping failures by separation of trains.

Conclusions

Based on the above, we conclude that the Surry Power Station is in compliance with the requirements of Sections III.G.3 and III.L to Appendix R of 10 CFR 50, except for the control room and emergency switchgear rooms which are still under review and will be addressed later.